

The Scarab Genus *Polyphylla* in Virginia (Coleoptera: Scarabaeidae)

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ABSTRACT

The distribution of *Polyphylla occidentalis* (Linnaeus), *P. variolosa* Harris, and *P. comes* Casey in Virginia is reviewed and mapped in light of numerous recent collections. The relationships of the last two are considered, and diagnostic characters of both are illustrated. There is no conclusive evidence that they intergrade in Virginia, despite suggestive coloration of some specimens.

Key words: Coleoptera, *Polyphylla*, Virginia, Scarabaeidae.

Probably the most abundant and conspicuous scarab beetles in Virginia are the large brown species of *Phyllophaga*, sometimes called May beetles or June beetles, that are attracted to porch or inside lights during early summer evenings. After spending their youth as white grubs feeding on the root systems of grasses, these insects emerge as flying adults, sometimes in enormous numbers, to form mating aggregations in trees in or near pastureland. Some 29 species of *Phyllophaga* are known from Virginia, and at least 12 others are likely to be found here with continued search.

Species of the related genus *Polyphylla*, (“lined May beetles”) are similar to but larger than most *Phyllophaga*, and distinguished from that genus by the presence of white scale-like hairs on the elytra and a different configuration of the antennal segments. The Virginia species are relatively scarce, they do not aggregate in great numbers, and only rarely intrude into residences. The primary purpose of this paper is to document the status of the three local species and solicit the cooperation of Virginia naturalists who may have the opportunity to secure additional material. These beetles are photopositive, and observation of this trait could result in captures during midsummer evenings.

The taxonomy of *Polyphylla* was revised in detail by R. M. Young (1988) who recognized 28 species, most of them occurring west of the Mississippi River. The three members of the genus native to Virginia (and a fourth restricted to Florida) were placed by Young (1988) in an “*occidentalis* complex” which was distinguished in his key to species solely by its geographic distribution.

Within this group, the Floridian *P. gracilis* is distinctive by its small size (length < 20 mm), and *P. occidentalis* by its elytral stripes and shape of the aedeagal apex. *Polyphylla variolosa* and *P. comes* are similar to each other in both elytral pattern and genitalia, and were separated by Young (1988) primarily on the length of the male antennal club (≤ 5 mm in the former, > 5 mm in the latter). Moreover, the ranges of the two, as known to Young (1988), were widely separated by nearly the entire breadth of Virginia. Material accumulated at the Virginia Museum of Natural History during the past decade suggests that this hiatus may be largely illusory, and that collection of specimens from relevant areas in the state may require re-appraisal of the taxonomic status of the two taxa.

***Polyphylla occidentalis* (Linnaeus)**

This species is recognizable by the fairly well-defined elytral stripes (Fig. 1) and, in the male sex, apical structure of the aedeagus (Fig. 2).

Young’s (1988) monograph provided complete literature references, description, illustrations of the genitalia, list of specimens examined, and a distribution map. The range extends from eastern Virginia south throughout Florida, and west to Mississippi, mostly in the Coastal Plain but with a few Piedmont localities. Young (1988) cited Virginia specimens from King & Queen, Northampton, and Prince George counties, and the cities



Fig. 1. Typical color patterns of three species of *Polyphylla*. Left: *P. comes* Casey, specimen from Floyd Co., Virginia. Center: *P. variolosa* Harris, specimen from Accomack Co., Virginia. Right: *P. occidentalis* (Linnaeus), specimen from Virginia Beach, Virginia.

of Hampton, Norfolk, Suffolk, and Virginia Beach. VMNH specimens add the counties of Henrico, Isle of Wight, and Sussex, and the City of Chesapeake. In addition, there is a single specimen from Vesuvius, Rockbridge County, which may be mislabeled, or an aeolian adventive out of the normal range. All of these localities are plotted on the map (Fig. 4).

***Polyphylla variolosa* (Hentz)**

This species is similar to the following in lacking distinct white discal lines on the elytra (Fig. 1), and shares with it a somewhat similar genitalic structure (Fig. 2). The antennal club of the male is said to be less than 5 mm in length, but measurements are difficult to obtain with accuracy owing to its curvature.

Polyphylla variolosa is unusual in the genus for its occurrence in northeastern North America. Young's (1988) map shows localities from Quebec and southern Maine southward to Virginia, with disjunct capture sites in western New York and southern Ontario. By far the majority of the localities are within 100 miles of the

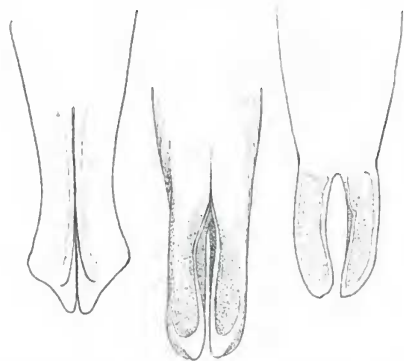


Fig. 2. Aedeagi of three species of *Polyphylla*, distal half, dorsal aspect: *P. occidentalis* (left), *P. variolosa* (center) and *P. comes* (right). In *P. occidentalis* the thin dorsal flanges of the parameres are closely appressed into a single, thin sharp blade.

Atlantic Coast. Young (1988) cited specimens from Accomack County (Assateague Island), and the cities of Hampton and Newport News. VMNH also has a specimen from Accomack County (Parramore Island, 16 July 2003, Anne C. Chazal), which adds nothing to existing knowledge of distribution but serves as a reference for the characters of *P. variolosa*. Virginia records are shown by squares on Fig. 5.

The male specimen from Parramore Island allowed a close comparison with material of *P. comes* from western Virginia. In addition to verifying the characters used by Young (1988) to separate these two species, I was able to notice another not hitherto utilized: the outline of the elytra at the apex of the sutural margin. This area is by far more acuminate produced in *P. variolosa* (Fig. 3), at least in eastern Virginia. I have not had the opportunity to investigate the constancy of this difference in specimens from more northern parts of the range.

***Polyphylla comes* Casey**

This distinctive species was proposed by T. L. Casey (1914: 340) for specimens from Kentucky, and was contrasted only with *P. variolosa*. The differences noted in the long descriptions pertained largely to color pattern and size of the antennal club (Casey's statement that *P. comes* is "...much larger..." is shown by his own measurements to be on the order of one millimeter of length, apparently a dimension of substantial magnitude in Casey's mensural scale).

Specimens available to Young (1988) defined a range extending from southwestern Virginia south and west through the southern Blue Ridge to Mississippi and Louisiana. The species is widespread in the mountains of North Carolina, and southwestern Virginia, from where recorded by Young (1988) from a site in Montgomery County. Recent collections provide additional localities in that region, and more importantly, in the Piedmont as well (Fig. 5):

Floyd Co.: Rt. 622, 4 km SW of Indian Valley, 17 July 1988, UV, RLH (1). *Grayson Co.*: Grayson Glades

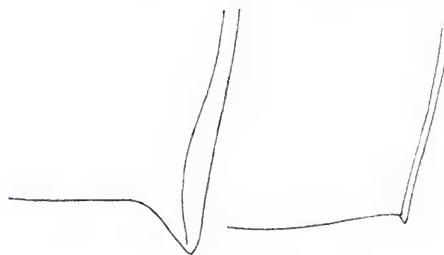


Fig. 3. Sutural apex of elytra in *Polyphylla variolosa* (left) and *P. comes* (right). Drawings made from two males of similar size and oriented into exactly the same postero-lateral aspect.



Fig. 4. Distribution of *Polyphylla occidentalis* in Virginia. The locality in King & Queen County is the northernmost known for this species. The spot in Rockbridge County represents a possibly mislabeled specimen. Dashed line represents the Fall Line; solid lines define the Blue Ridge Physiographic Province.



Fig. 5. Distribution of *Polyphylla comes* (•) and *P. variolosa* (■) in Virginia. The + symbol indicates location of the Richmond sample of *P. comes* with variable color patterns (see text).

Natural Area Preserve, jct. Rts. 89 and 821, ca. 7 km SE of Galax, 23 June 2004, UV, S. M. Roble (1). *Patrick Co.*: Clark's Creek, Rt. 609, 5 km SW of Ararat, 7 August 1994, UV, RLH (1). *Pittsylvania Co.*: Sandy River at Rt. 845, 24 June 1993, UV, RLH (1).

Nine specimens (all VMNH) from the University of Richmond, western end of the City of Richmond, merit special consideration because of the locality and variation in elytral color pattern. The collection data are 30 June 1935 (4), 1 July 1935 (1), 7 July 1935 (1), and 11 July 1935 (1), all F. R. Freund leg.; 11 June 1936 (1) and July 1935 (1), both Carroll Williams. Four of these specimens show the fairly bold white elytral markings of typical *P. comes* (although the ground color is much lighter brown), one is as patternless as the Parramore Island *P. variolosa*, and the other four fall somewhere in between. My initial inclination to rank this Richmond population as intermediate between the two species, on the basis of coloration, was negated by two other characters, however. The aedeagus, with wide basal sinus between the parameres, is similar to that of *P. comes*, and the sutural

apex of the elytra lacks the triangular projection seen in *P. variolosa*. Nonetheless, the case is not necessarily closed, as there are still no adequate series of either species from the Virginia Coastal Plain where more significant structural intermediacy may occur. Naturalists in that area are again encouraged to be alert for these beetles, and to accumulate material towards an eventual definitive resolution of the problem.

LITERATURE CITED

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